

IN THE CLAIMS

Please amend the claims of the present application under the provisions of 37 C.F.R. §1.121, as indicated below:

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1. (currently amended) An optical structure for processing optical energy comprising:
- a metal layer having a first surface comprising a plurality of voids having a dimension less than the wavelength of optical energy being processed;
 - ~~an active or non-linear~~ a first material taken from the group consisting of an active and a non-linear material substantially adjacent to at least a portion of the metal layer in the area of the plurality of voids wherein the plurality of voids in the metal layer exhibit localized ~~plasma~~ resonances that enhance emission and absorption of optical energy through the ~~active or non-linear~~ first material; and
 - a substrate for supporting the metal layer.
2. (original) The structure of Claim 1 wherein said voids are concave and indentations.
3. (original) The structure of Claim 1 wherein said voids extend from the first surface to a second surface of said metal layer.
4. (original) The structure of Claim 3 wherein said voids are cylindrical holes passing through said metal layer.
5. (original) The structure of Claim 4 wherein said voids have a diameter of from about 10 nm to about 1 micron.
6. (original) The structure of Claim 1 wherein said voids are arranged in an ordered array.
7. (currently amended) The structure of ~~claim~~ Claim 6 wherein said voids are arranged in a triangular array.

8. (original) The structure of Claim 7 wherein said voids arranged in an ordered array produce a phased matched effect.

9. (original) The structure of Claim 1 wherein said metal layer is greater than 50 nm thick.

10. (currently amended) The structure of Claim 1 wherein the ~~active or non-linear~~ first material is placed adjacent the voids.

11. (currently amended) The structure of Claim 1 wherein the ~~active or non-linear~~ first material is placed inside said voids.

12. (currently amended) The structure of Claim 1 wherein the ~~active or non-linear~~ first material is in the form of a layer on top of said metal layer.

13. (currently amended) The structure of Claim 1 wherein the ~~active or non-linear~~ first material comprises one or more ~~active or non-linear~~ layers comprising materials taken from the group consisting of an active material and a non-linear material placed between a substrate and said metal layer.

14. (cancelled)

15. (currently amended) The structure of Claim 1 wherein the ~~active or non-linear~~ first material is placed at least partially in the voids.

16. (currently amended) The structure of Claim 1 wherein the ~~active or non-linear~~ first material fills the voids.

17. (original) The structure of Claim 1 which is in the form of a laser, an LED, a wavelength converter, a sensor or a switch.

18. (currently amended) A method for processing optical energy comprising directing optical energy at a first surface of a metal layer, said surface comprising one or more voids having a dimension less than the wavelength of optical energy being processed and an ~~active or non-linear~~ first material taken from the group consisting of an active material and a non-linear material substantially adjacent to at least a portion of the plurality of voids.

19. (original) The method of Claim 18 wherein the voids are formed in the first surface of the metal layer in an ordered array.

20. (original) The method of Claim 18 wherein the voids are filled with a gain material.

21. (original) The method of Claim 18 wherein the gain material is placed adjacent the voids.

22. (original) The method of Claim 18 using a gain layer placed in between a substrate layer and a metal layer.

23. (original) The method of Claim 18 wherein the voids are filled with a non-linear material.

24. (currently amended) The method of ~~claim~~ Claim 18 wherein the non-linear material is placed adjacent the voids.

25. (original) The method of Claim 18 using a non-linear material placed in between a substrate layer and a metal layer.

26. (original) The method of Claim 18 further comprising optical plumbing.

27. (original) The method of Claim 18 further comprising phase matching to form optical second harmonic generation.

28. (currently amended) A laser comprising:

a metal layer having a first surface comprising a plurality of voids, said voids having a dimension less than the wavelength of optical energy being processed;

an active material substantially adjacent to at least a portion of the metal layer in the area of the plurality of voids wherein the plurality of voids in the metal layer exhibit localized ~~plasma~~ resonances that enhance emission of optical energy through the active material; and

a substrate for supporting the metal layer.

29. (currently amended) An LED structure comprising:

a metal layer having a first surface comprising a plurality of voids, said voids having a dimension less than the wavelength of optical energy being processed;

an active material substantially adjacent to at least a portion of the metal layer in the area of the plurality of voids wherein the plurality of voids in the metal layer exhibit localized ~~plasma~~ resonances that enhance emission of optical energy through the active material; and

a substrate for supporting the metal layer.

30. (currently amended) An optical switch structure comprising:

a metal layer having a first surface comprising a plurality of voids, said voids having a dimension less than the wavelength of optical energy being processed;

a non-linear material substantially adjacent to at least a portion of the metal layer in the area of the plurality of voids wherein the plurality of voids in the metal layer exhibit localized ~~plasma~~ resonances that enhance emission of optical energy through the non-linear material; and

a substrate for supporting the metal layer.
